



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,721	12/28/2001	Masayuki Sanbayashi	Q63304	4073

7590 12/19/2002

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

HAILEY, PATRICIA L

ART UNIT	PAPER NUMBER
----------	--------------

1755

DATE MAILED: 12/19/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,721

Applicant(s)

SANBAYASHI ET AL.

Examiner

Patricia L. Hailey

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 16, 17, 20-23 and 25-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, ~~4~~ 9, 12-15, 18, 19 and 24 is/are rejected.
- 7) ☒ Claim(s) 4-~~6~~ 10, and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Documents were filed on April 25, 2002.

Claim Objections

2. Claims 16, 17, 20-23, and 25-27 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, these claims have not been further treated on the merits.

Claims 1-15, 18, 19, and 24 are presently under consideration by the Examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1, 3, 6, 7, 9, 12-15, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Taoda et al. (U. S. Patent No. 5,981,425).

Taoda et al. teach a coating composition comprising a coating component and a photocatalyst containing calcium phosphate and titanium oxide, specifically titanium oxide partially covered thereon with calcium phosphate. See col. 1, line 65 to col. 2, line 3 of Taoda et al.

Preferably, from 1 to 99% (area %) of the surface of the titanium oxide (preferably in anatase form, see col. 2, lines 23-24 of Taoda et al.) is covered with calcium phosphate (which can be apatite, tricalcium phosphate, or octacalcium phosphate). See col. 2, lines 20-27 of Taoda et al. This disclosure is considered to read upon the phrase "photo-functional particles" (claim 1). Although the calcium phosphate is not defined as a "condensed phosphate", the calcium phosphate of Taoda et al. is considered to be equivalent to the claimed "condensed phosphate".

With respect to the coating composition, it is possible to use any aqueous or solvent-type organic coatings or inorganic coatings known in the art. Examples of the organic coatings include vinyl-type synthetic resin emulsions. See col. 5, line 44 to col. 7, line 2 of Taoda et al. This disclosure is considered to read upon the phrase "aqueous slurry" (claim 13) and the phrase "organic polymer composition" (claims 17-19).

The photocatalyst is present in the coating composition in a mixing ratio of generally 1 to 50% by weight in terms of ratio by solid content, relative to the organic or inorganic coating. See col. 8, lines 26-30 of Taoda et al.

With respect to the claim limitations regarding the pH of the "aqueous slurry" and its transmittance, these limitations are considered to be inherently taught by Taoda et al., in view of the amount of the photocatalyst (titanium oxide and calcium phosphate) present in the coating composition (photocatalyst and organic or inorganic coating).

In view of these teachings, Taoda et al. anticipate claims 1, 3, 6, 7, 9, 12-15, and 17-19.

5. Claims 1-3, 6-9, 12, 18, 19, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Hagihara et al. (U. S. Patent No. 6,383,980).

Hagihara et al. teach a photocatalytic titanium dioxide powder comprised of finely divided titanium dioxide particles each having supported on the surface thereof a first supported layer of a calcium compound. See col. 3, lines 1-5 of Hagihara et al.

The titanium dioxide particles have photocatalytic activity, have a crystal form mainly comprising anatase or brookite, and preferably have an average particle diameter in the range of from about 0.001 μm to about 0.2 μm . See col. 3, line 66 to col. 4, line 7 of Hagihara et al.

Calcium phosphate is an exemplary calcium compound supported on the surface of the titanium dioxide particles. See col. 4, lines 21-31 of Hagihara et al.

The above photocatalytic titanium dioxide powder can be used in the form of an organic polymer composition by incorporating the powder into an organic polymer. Exemplary organic polymers include thermoplastic synthetic polymers, thermosetting synthetic polymers, and natural polymers. The concentration of photocatalytic titanium dioxide powder in the polymer composition is usually in the range of from about 0.01% to about 80% by weight, based on the total weight of the polymer composition. See col. 7, lines 1-36 of Hagihara et al.

Additionally, the polymer composition may be shaped into articles including a molded article, e.g., fiber, film, sheet, compression-molded article, plastic molded article, etc. See col. 7, lines 41-55 of Hagihara et al.

Hagihara et al. do not disclose the deposited calcium phosphate (col. 4, lines 32-43) as a "condensed phosphate". However, the calcium phosphate of Hagihara et al. is considered to be equivalent to the phrase "condensed phosphate".

In view of these teachings, Hagihara et al. anticipate claims 1-3, 6-9, 12, 18, 19, and 24.

Allowable Subject Matter

6. Claims 4-6, 10, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

Neither Hagihara et al. nor Taoda et al. teach or suggest the specific condensed phosphates recited in claims 4-6, 10, and 11.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

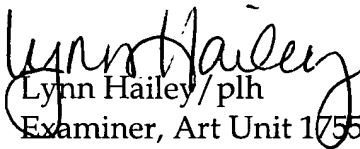
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia L. Hailey whose telephone number is (703) 308-3317. The examiner can normally be reached on Mondays-Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark L. Bell can be reached on (703) 308-3823. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Application/Control Number: 10/028,721
Art Unit: 1755

Page 7

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.


Lynn Hailey/plh
Examiner, Art Unit 1755
December 11, 2002


Mark L. Bell
Supervisory Patent Examiner
Technology Center 1700